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ABSTRACT

In spring 1996 Franklin County (KY) schools conducted a research project with three teachers at Western Hills High School to determine whether student attitudes change as a result of becoming involved in service learning. Each teacher used one class for a test group and another for a control group. Two types of pre- and posttests were given to each group of students. One test gathered information on attitudes toward subject matter, the teacher, and the specific project with which the students would become involved. The other test targeted attitudes students had toward themselves, their community, and volunteering. In addition, pre- and post-project records were kept on grades and attendance for each student group. Each test group was involved in their own service-learning project (an algebra class worked with senior citizens; a pre-algebra class tutored elementary students; and a physical science class painted playground equipment, conducted soil testing, and taught elementary students about the laws of motion). Results indicated that overall, grades and attendance did not improve for the test students after involvement in the projects. Findings suggest two trends: (1) long-term projects with the same service recipients can have more of an impact than one-time or indirect projects; and (2) becoming involved in service learning has a more positive impact on student attitudes toward a social issue or group of people than on grades or attendance. Contains extensive data and a five-item bibliography. Likert tests are appended for the three projects and the semantic differential test for all three projects. (BT)

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SERVICE-LEARNING

Does it affect
attitudes, grades, and attendance
of students who participate?

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TABLE OF CONTENTS

	Abstract
P. 1	Purpose/Rationale Background Data Collection
P. 2	Project Descriptions -- Project 1
P. 3	Project Descriptions -- Project 2
P. 4	Project Descriptions -- Project 3
P. 5	Data Analysis
P. 6-8	Project 1 Results
P. 9-11	Project 2 Results
P. 11-14	Project 3 Results
P. 14-15	Summary
P. 16	Budget
Appendix A	Testing Instruments used
Appendix B	Behavior Rating Scale, Student Information Sheet
Appendix C	Tutoring Contract, Tutoring Information Sheet
	Bibliography

ABSTRACT

In the Spring of 1996, Franklin County Schools conducted a research project with three teachers at Western Hills High School to determine whether student attitudes change as a result of becoming involved in service-learning. Each teacher used one of their classes for a test group and another for a control group. Two types of pre- and post-attitude tests were given to each group of students. One test gathered information on attitudes toward subject matter, the teacher, and the specific project in which the students would become involved. The other test targeted attitudes students had toward themselves, their community, and volunteering. In addition, pre- and post-project records were kept on grades and attendance for each group of students. Each test group was involved in their own service-learning project: an algebra class worked with senior citizens; a pre-algebra class tutored elementary students; and a physical science class painted playground equipment, conducted soil testing, and taught elementary students about the laws of motion.

The results of the research conclude that, overall, grades and attendance did not improve for the test students after involvement in the projects. Attitudes of the test students who worked with senior citizens did improve positively compared to the control group whose attitudes decreased slightly. The test class involved in tutoring elementary students improved their attitudes toward themselves and volunteering in the community; however, their attitudes toward children and tutoring showed very little change. The students in the physical science test class had no positive attitude changes. The results of this research showed two interesting trends: (1) long-term projects with the same service recipients can have more of an impact than those which are one-time or indirect projects, and (2) becoming involved in service-learning has a more positive impact on student attitudes toward a social issue or group of people than on grades or attendance.

PURPOSE/RATIONALE

The purpose of this research was to determine whether high school students improve their grades, attendance, and attitudes as a result of becoming involved in a service-learning project through their required curriculum. Because many high schools are mandating service as a graduation requirement, this research was conducted in an effort to determine whether this type of experience can provide meaningful applications for students.

Question researched: *Will students' attitudes about their peers, teachers, subject content, and the projects they worked on during this research change after becoming involved in service-learning through their required curriculum?*

Hypothesis tested: *Service-learning will benefit those students who are exposed to this type of teaching strategy, resulting in increased motivation, better attendance, reduced discipline problems, improved grades, and better attitudes toward service recipients and/or the projects they worked on through this research.*

BACKGROUND

Three teachers at Western Hills High School in the Franklin County School District participated in this research by incorporating service-learning into the curriculum of one of their classes --this provided three test groups. In addition, each teacher used another class learning the same subject material as the control group. The three classes were Pre-Algebra, Algebra, and Physical Science, all primarily populated by freshman and sophomore students. These classes were targeted based on the school's goal to improve KIRIS scores in these two areas, as is documented in their School Transformation Plan.

This research took place during the spring semester (January-May) of 1996. The actual service aspect of this research took place after the first grade cards were issued 4 1/2 weeks into the semester -- students were not told of their involvement in the projects until that time. This helped establish baseline data for the project. At that time, the first attitude tests were given to all test and control groups.

DATA COLLECTION

Data was collected using three methods:

(1) Pre and Post attitude surveys:

Prior to the start of this project, the project coordinator researched the available attitude testing instruments on the market. It was determined that, because of the specific attitude changes this project was to focus on, a test would have to be especially developed for this particular research project. The project coordinator developed two types of tests, with the assistance of Dr. Ron Atwood at the University of Kentucky, which were geared toward this specific project. These tests sought information on attitudes the students had toward school, the community, and themselves, as well as attitudes students had toward the specific type of project in which they would be involved while this research was being conducted.

a) Lickert model

This test provided a general focus on:

- how students felt about the subject matter in the class where this research took place
- attitudes toward their teacher
- attitudes about the issues or types of people they would be working with through their project

b) *Semantic Differential model*

This test provided a general focus on:

- how the students felt about themselves
- feelings toward the community
- feelings toward school and their classmates
- feelings toward volunteer work and helping others
- how they felt the community viewed them as teenagers

(Please see Appendix A for copies of the testing instruments used for this research. See Bibliography for listing of literature used for the design of these tests).

These two tests were given to students in both the test and control groups prior to the start of the project and at the conclusion of the project. Due to absences on the day the tests were given and classroom time constraints, each of the students did not complete both tests. It is assumed, however, that the data collected through these two tests did provide an average cross section of the attitudes of the students in the entire class. Also, because all students did not complete each of the two tests and there were not equal number of students in each class, averages rather than totals were computed to tally the results of each of the responses. These tests were then analyzed by the project coordinator by assigning numerical values to each individual question and entering the results into a data base to determine any changes that occurred both *within* each test and control group (before and after project completion) as well as *between* the test and control groups.

(2) Teacher observations in behavior and attitudes of the test group only

Each teacher involved in this research completed a behavior rating scale for each of the students in their test group both prior to and after completion of their project. Each student was assigned a numerical value based on responses of the teachers. In addition, teachers kept notes on any behavior changes of the test group students during the course of the research. (See Appendix B for a copy of the behavior scale used)

(3) Assessment of grades and attendance

Records of grades and attendance for both test and control groups were reviewed and analyzed to determine any changes that occurred for each group during the second semester of the 1995/96 school year when this research took place.

PROJECT DESCRIPTIONS

A. PROJECT 1: *Working with Senior Citizens*

Teacher: Jerry Chase

Subject: algebra

Goal:

The goal of this project was to help the students break down stereotypes they may have about the elderly and to improve their competency in algebra. Senior citizens in the community were invited and encouraged to become algebra tutors. Students regularly visited the senior citizen center to receive tutoring and interact with the senior citizens.

Overview:

Because of the abstract nature of algebra, it was difficult to incorporate service-learning into this curriculum. The project chosen involved senior citizens in the community who were asked to provide weekly tutoring assistance to students enrolled in the class. Because of the difficult and intimidating subject material, many seniors were reluctant to participate in the tutoring aspect of the project, and, as a result, only two senior citizens agreed to participate. The students visited

the Senior Citizen Center once each week to meet with the tutors as well as to interact with the other seniors. In addition to tutoring, the students conducted a project to determine probability while organizing a bingo game. Students were also given opportunities to interact and conduct discussions with the seniors. One way this was done was to have the students learn a card game from the seniors, with students responsible for taking notes on how the game was played. The students also helped set up for a yard sale which was a fund-raiser for the Center.

Reflections:

As mentioned previously, seniors in the community were very reluctant to take part in the tutoring aspect of the project. As a result, other aspects of the program were tried such as the bingo game and informal discussions. Although the number of senior citizens who tutored was low, the regular visits to the Senior Citizen Center helped students become more comfortable at the Center. The data will show that students knowledge of algebra did not increase as a result of this project; however, their attitudes toward the seniors were positively influenced.

Number of students involved: 28

Number of visits to Senior Citizen Center: 8

Total volunteer hours: 226

B. PROJECT 2: *Relating Science to the Real World*

Teacher: Alycia Townsend

Subject: physical science

Goal:

The goal was to involve students in projects which would provide them with an understanding of how science can fit into their everyday lives.

Overview:

This project was different from Project 1 and 3 in that it was not done on a consistent basis throughout the semester with the same group of service recipients. This was due to the variety of the subject matter taught in this class. It was therefore necessary to have the students do a variety of projects that related to the subject material they were studying at any given time. During the semester, students conducted three projects: (1) soil testing on a local farm (this tied with a unit on soils and soil analysis), (2) painting playground equipment at an elementary school (this tied with a unit on oxidation and corrosion), and (3) teaching elementary students lessons about the laws of motion (students were teaching what they had learned to others).

Reflections:

Because different projects had to be found throughout the semester, it was difficult to do anything beyond the three projects that were conducted. In addition, inclement weather also hindered the amount of projects conducted because many would have taken place outdoors. As a result of these problems, the service-learning aspect of this class was not very consistent and, therefore, not as broadly incorporated into the curriculum to make a significant impact for the students. However, because this project differed from Project 1 and 3, it provided another aspect to this research. In comparing this project with the other two, a conclusion can be drawn that students who are involved in service-learning projects, where they work with the same service recipients over an extended period of time, have a more significant impact on students than those that are one-time or indirect projects.

Number of students involved: 24

Number of projects conducted: 3

Total volunteer hours: 137

C. PROJECT 3: Tutoring Elementary Students in Math
Teacher: Steven Fry
Subject: pre-algebra

Goal:

The goal was to provide high school students with a consistent review of basic math skills through teaching these concepts to elementary students in need of one-on-one math assistance. By having the high school students tutor and mentor a child, it was anticipated that they would improve their math skills as well as their attitude about themselves.

Overview:

Students provided weekly math tutoring for elementary children in need of extra attention. Six teachers at Collins Lane Elementary were asked to participate in this program, with each providing about six students to regularly attend tutoring sessions. They provided information on the subject matter each child was to focus on during the weekly tutoring sessions. Flashcards and math games were purchased and used throughout the sessions. It was hoped that as the high school students helped the children with the basics of math, it would provide a valuable review of the material which would help them in their pre-algebra class.

Reflections:

Lack of communication was the biggest problem encountered with this project. While the teachers at Collins Lane were willing to participate in the project, their time commitment was limited to identifying students in need of tutoring and writing down what they should work on in the sessions. Although meetings were conducted between the teachers and the Project Coordinator, due to scheduling difficulties, no meetings were held between the Collins Lane teachers and the Western Hills teacher whose class would be involved in the tutoring. Although the goal was to provide as many one-on-one situations as possible, due to constant attendance changes in both the Western Hills students as well as the Collins Lane students, it was difficult to fulfill the one-on-one goal. In addition, because of the constant turnover, many students were unable to meet regularly with the same child each week which did not provide the consistent mentoring aspect hoped for in this project.

Because this project developed problems at the onset, the Project Coordinator held a meeting with the Collins Lane teachers to request their opinions on how to make it work more effectively. As a result of this meeting, a tutoring contract was developed and signed between the Western Hills and Collins Lane students so that both would understand their role in this project. Also, at the conclusion of each tutoring session, the high school students filled out a "Tutoring Information Sheet" which the child took back to their teacher explaining what they had worked on as well as any behavior problems that occurred. This form seemed to help because it provided the vital communication link needed between the tutors and the Collins Lane teachers. (See Appendix C for examples of forms used) The project seemed to operate more smoothly after this was initiated. However, upon conclusion of the project, evaluation forms completed by the Collins Lane teachers showed that they felt their students only benefited minimally from their tutoring sessions.

In addition to the problems cited above, another major concern, which reduced the success of the project, was lack of appropriate space to hold the tutoring sessions. The multi-purpose room was used which contained no tables or chairs. While some students were able to use a small room off the multi-purpose room which had some tables and chairs, several pairs still had to sit on the floor, which did not help provide the structured setting needed. If any future tutoring programs are established, a structured environment with appropriate seating will be secured before the project is initiated.

Number of students involved: 29

Number of visits to Collins Lane Elementary: 7

Total volunteer hours: 154

DATA ANALYSIS

Because each of the three projects differed substantially in the type and extend of service conducted, each of the projects were analyzed individually.

A. Pre and Post Attitude Surveys

1. Lickert Model:

Each student was given a test containing 22 statements in which they rated their response as (1) Strongly Agree, (2) Agree, (3) Undecided, (4) Disagree, and (5) Strongly Disagree. The test contained both positive and negative statements; the responses were rated individually and each assigned a point value of 1 to 5 based on whether the student responded positively or negatively. For example, question number 1 stated "Working with numbers is fun.", a positive statement. If the student responded Strongly Agree, they were assigned a point value of 5 for that individual statement. Conversely, statement number 2 stated "Algebra should be avoided whenever possible.", a negative statement. If the student responded Strongly Disagree, they were assigned a point value of 5 for that individual statement. Each of the questions were assigned a point value and all questions were totaled to give each student an overall score for that test.

Statements 1 through 14 focused on their attitudes of the subject matter, the teacher, and the class in general. Student responses to these questions were averaged apart from questions 15-22 to determine changes to these specific topics.

Statements 15-22 rated their attitudes toward the types of projects or people they would be working with through this research, therefore, each of the three classes were given a Lickert test geared specifically toward their project. As with the previous questions, student responses for these questions were averaged separately from questions 1-14 to determine attitude changes toward these specific topics.

The maximum number of points which could have been scored per student per test was 110; maximum number of points per question was 5.

2. Semantic Differential Model:

Each of the three projects were given identical semantic differential tests. Each test contained eight statements with five polar opposite adjectives below each of the statements ranging from positive to negative and vice versa. For example, the first statement and polar adjectives read as follows:

"I think teenagers are"

good	___:___:___:___:___	bad
cruel	___:___:___:___:___	kind
honest	___:___:___:___:___	dishonest
valuable	___:___:___:___:___	worthless
sad	___:___:___:___:___	happy

The students were asked to respond to the statements based on what they meant to the students. Each response was rated on a scale of 1-5, with positive responses being given a the higher point value (either 4 or 5), responses rated neutral a 3, and negative responses being given a lower point value (either 1 or 2). Each statement was then

given an overall point value and all statements were totaled to give an overall score for each test. The maximum number of points which could have been scored per test by each student was 200; maximum point value per question/statement was 25.

3. In order to determine statistical significance of these attitude tests, t-tests were run on the overall scores for the test and control groups, as well as overall scores within each project for both test and control group. The t-tests all indicate that no statistically significant changes occurred. However, this report does reveal some interesting trends from which conclusions can be drawn on how and whether students' attitudes change after becoming involved in a service-learning project.

B. Teacher observations and behavior rating scale -- test group only

The behavior rating scales were completed by teachers for the test group only both before and after completion of the projects. This information was entered into a data base. All scores for each test group were averaged to arrive at one score both before and after the project. The higher the rating, higher the opinion of the teacher toward the student. Teacher comments on student behavior were noted when relevant.

C. Records of grades and attendance

Increases and decreases between mid-term and final grades were calculated for both the control and test groups. The number of absences for the test and control groups for each of the three projects were also calculated and averaged.

PROJECT 1: WORKING WITH SENIOR CITIZENS

RESULTS

I. Pre and post attitude tests

A. Lickert Model

The following table separates the averages for both test and control groups for overall scores, scores for questions 1-14, and scores for questions 15-22.

		<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test:	Overall averages	69.07	73.85	+ 4.78
	Questions 1-14	41.41	42.50	+ 1.09
	Questions 15-22	27.67	31.35	+ 3.68
Control:	Overall averages	68.83	68.86	- .03
	Questions 1-14	41.70	41.86	+ .16
	Questions 15-22	27.13	27.00	- .13

- As the scores show, there was a 4.78 point increase in overall average scores for the test group as compared to the control group which decreased slightly. Therefore, although modest, there was a slight increase in overall positive attitudes on the part of the test group.

- In looking at questions 1-14, the test group showed a slight increase in attitudes over the control group toward the subject, teacher and class.
- Although small, the most relevant change occurred in questions 15-22 which focused on attitudes toward senior citizens. The test group score increased nearly four points whereas the control group decreased. It appears evident that the test group, who were exposed to senior citizens through their project, positively increased their attitudes toward this age group. Of most significance are the following questions and the changes in responses from the test and control group:

#	Question	Difference in Pre and Post scores	
		<u>Test</u>	<u>Control</u>
15	Senior citizens have no value	+ .5	no change
17	Senior citizens scare me	+ .6	+ .2
19	I like being around senior citizens	+ .6	+ .2
21	I have no desire to help senior citizens	+ .5	- .3
22	Senior citizens like being around teenagers	+ .6	- .2

The results indicate that the students' attitudes toward senior citizens did change for the better, proving that continued exposure to this group *can* have positive benefits for the students involved.

B. Semantic Differential

The following are the overall average total scores of the pre and post tests for both groups:

	<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test Group	129.75	130.30	+ .55
Control Group	129.20	128.48	- .72

Although the changes between pre and post tests for the test group only showed a slight increase, their responses did increase rather than decrease as shown by the control group. The results indicate that this project did very little to change students attitudes toward themselves, their community, or volunteering.

II. Teacher observations and behavior rating scale

The following are the average behavior rating scale scores for the test group both before and after project.

Pre-project average: 79.86

Post-project average: 82.71

The results indicate that the attitude the teacher had toward students in general improved; however, it is difficult to conclude that this happened as a result of the project. The comments made by the teacher indicate that several worked well at the senior citizen center and enjoyed interacting with this age group. Some students did not immediately begin interacting with the seniors, but often warmed up after visiting a few times. Only four students were not permitted to go to the Center once due to the fact that they did not have a book to take with them. The following teacher comments were made on two students who had the most significant changes:

"Very open and friendly -- much more than I have ever seen at the Senior Citizen Center or in class. Shook hands with instructor and thanked them.....Helped set up the yard sale. Worked the hardest of everyone. Didn't take a break."

"...has demonstrated the most significant change in behavior in the entire class. He seemed to have a 'chip on his shoulder' at the beginning. He has mellowed quite a bit and could even be called 'gentlemanly'."

III. Records of grades and attendance

- A. Grades -- The following is a table indicating the average grades (percentages based on a 100% scale) both before and after the project for each group.

	<u>PRE-GRADES</u>	<u>POST- GRADES</u>
Test Group	72.11%	64.29%
Control Group	81.65%	78.74%

The data indicates that working with the senior citizens did not have an impact on the students' grades. In reflecting with the teacher, he also concluded that the project did little to improve the knowledge the students had about algebra; however, the exposure to this age group did positively impact the students' attitudes toward senior citizens as was shown in the above data. In reflecting on the project the teacher stated "No significant changes in behavior/attendance. There seemed to have been changes in attitudes concerning senior adults."

- B. Attendance

The following table indicates attendance for each group both before and after participating in their project. These data were calculated by determining the percentage of days each student was in class both before and during the project and averaging these figures.

	<u>Pre Project</u>	<u>During Project</u>	<u>Difference</u>
Test Group	90.93%	88.06 %	- 2.87%
Control Group	93.73%	92.0%	-1.73%

A similar conclusion can be drawn from the attendance data as from the grade data -- involvement in the project had little or no impact on student attendance for those classes in which they participated in this research.

IV. Student Comments

The teacher provided an opportunity to have the students reflect on their involvement with the seniors. The following are select quotes:

"I learned that senior citizens aren't as mean as you think they are."

"My algebra class went to the Senior Citizen Center to be tutored in algebra. There wasn't as much tutoring going on as there was small talk between us and the senior citizens. Even though it didn't help us as much as it needed to in algebra, it helped our social skills."

"I learned what the true definition of being alone was. Some of the senior citizens were without family or their family didn't want them anymore. It made me appreciate everything I have and will have."

"I think this project helped us to not be as scared of the older people and know more about them. I liked the fellowship with people of all different age groups."

PROJECT 2: Relating Science to the Real World

RESULTS

I. Pre and post attitude tests

A. Lickert Model

The following table separates the averages for both test and control groups for overall scores, scores for questions 1-14, and scores for questions 15-22.

		<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test:	Overall averages	78.65	73.14	- 5.51
	Questions 1-14	51.70	46.29	- 5.41
	Questions 15-22	26.95	26.86	- .09
Control:	Overall averages	76.45	71.19	- 4.96
	Questions 1-14	47.85	45.94	- 1.91
	Questions 15-22	28.30	25.25	- 3.05

- As indicated by the overall scores, the overall attitudes of both the test and control group both decreased.
- Questions 1-14 indicate decreases for both groups as well, with the test group decreasing more than the control group in attitudes toward the class, teacher, and subject matter.
- Questions 15-22 also showed declines from both groups, although the test group showed less of a decline.

Because the other two projects, which provided consistency for the students, both had positive increases in their attitudes on this test for questions 15-22, a possible conclusion can be made: projects with more consistency can have a more positive impact than those with little or no consistency.

Interestingly, there was one question on this Lickert test which made a change worth noting:

<u>#</u>	<u>Question</u>	<u>Difference in Pre and Post Scores</u>	
		<u>Test</u>	<u>Control</u>
15	I like teaching children	+ .53	-.44

The one project the physical science students participated in, which involved direct human interaction, a core component of the other two projects, showed a positive increase in attitude. Perhaps it can be stated that the service-learning projects most enjoyed by the students include those with direct human contact, rather than those that are strictly indirect service projects such as the painting and soil testing conducted by this group.

B. Semantic Differential

The following are the overall averages of the pre and post tests for both groups:

	<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test Group	148.75	129.29	- 19.46
Control Group	111.75	131.00	+19.25

The data indicates that the test groups' attitudes toward the community, volunteering, etc. decreased after the project while the control group substantially increased. The only explanation that can be drawn is that these particular projects, along with the inconsistency of them, had no impact on how the students felt about themselves, their community, or volunteering. In fact, the results from the test group showed a decrease in all of the questions between the pre and post tests.

II. Teacher observations and behavior rating scale

The following are the average behavior rating scale scores for the test group both before and after project.

Pre-project average: 79.9

Post-project average: 77.6

This data seems to mirror the attitudes of the student, with the teacher's attitude toward the students dropping slightly during the semester. Overall the comments made by the teacher show that the projects had little impact on the students. Many continued to miss class, turn in work late, or have discipline problems. There seemed to be a mix of opinions toward the projects on the part of the students. The following are comments made by the teacher:

"...continues to forget assignments. He also seems very disinterested in the projects."

"...still misses a lot, but his attendance is improving. He enjoys going on the project trips...has determined that he is going to fail, so he does nothing and still misses regularly."

"...finally went on a trip and he did a very good job. He still misses about three days per week."

"...does fine, but seems indifferent to the class and to the project...grade has dropped and he is not very interested in the project...still allowing his grade to drop and seems to not care."

"...loved going on the first trip. He did well during the first day of soil testing as well. His classroom behavior is marginally better...has been in time out or suspended."

"...really enjoyed and was enthusiastic about our first trip...was doing better, but has been suspended for fighting."

"...is very bright, but introverted. This project has forced him to work with a group...seemed to enjoy the projects...he was wonderful at Bridgeport."

III. Records of grades and attendance

- A. Grades -- The following is a table indicating the average grades (percentages based on a 100% scale) both before and after the project for each group.

	<u>PRE-GRADES</u>	<u>POST- GRADES</u>
Test Group	65.8%	72.4%
Control Group	57.52%	51.32%

Although the test groups grades did positively change during the course of the semester, it would be difficult to conclude that involvement in the service-learning projects caused this change, especially with the inconsistent nature of the projects conducted throughout the semester.

B. Attendance

The following is a table indicating attendance for each group both before and after participating in their project. These data were calculated by determining the percentage of days each student was in class both before and during the project and averaging these figures.

	<u>Pre Project</u>	<u>During Project</u>	<u>Difference</u>
Test Group	83.39%	88.13 %	+ 4.74%
Control Group	89.04%	82.56%	-6.48%

Again, it would be presumptuous to assume that participation in this project influenced the increase in attendance for the test group, especially with the inconsistent nature of the projects.

PROJECT 3: Tutoring Elementary Students in Math

RESULTS

I. Pre and post attitude tests

A. Lickert model

The following table separates the averages for both test and control groups for overall scores, scores for questions 1-14, and scores for questions 15-22.

		<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test:	Overall averages	80.59	82.00	+ 1.41
	Questions 1-14	49.48	50.56	+ 1.08
	Questions 15-22	31.10	31.44	+ .34
Control:	Overall averages	77.52	76.81	- .71
	Questions 1-14	46.57	45.13	- 1.44
	Questions 15-22	30.96	31.69	+ .73

- Similar results of the pre and post data occurred with this group as with the Project 1, with the test groups' overall attitudes positively changing, even though very slightly. As previously mentioned, the consistency of this project may have helped to determine whether the students had a positive experience with their service-learning project.

- Questions 1-14 indicate that the test groups' attitude toward the class, subject matter, and teacher improved over the course of the semester. However, it would be difficult to prove that this was due to involvement in the service-learning project.
- Questions 15-22 showed improvement in attitudes of the test group toward tutoring and children; however, the control group improved as well. Of significance is the following question in relation to the test and control groups' responses:

#	<u>Question</u>	Difference in Pre and Post scores	
		<u>Test</u>	<u>Control</u>
15	Helping children with school work is fun	+ .62	- .15

The responses indicate that the students did enjoy helping the students at Collins Lane, whereas those students who did not participate in the project did not think helping children with school work was fun. Perhaps they responded this way because they had not had any direct experience with tutoring a child.

However, other questions showed results which seemed to indicate that the test students did not have positive experiences from their tutoring:

#	<u>Question</u>	Difference in Pre and Post scores	
		<u>Test</u>	<u>Control</u>
18	It is important to take an interest in children	- .09	+ .15
20	Children look up to me	- .04	- .18
21	Children scare me	- .35	+ .52

These data may indicate that, although the students found tutoring a fun and positive experience, being involved in the project did not make them feel better about themselves or being around children. It is difficult to determine why these two data seem to contradict themselves.

B. Semantic Differential

The following are the overall averages of the pre and post tests for both groups:

	<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>DIFFERENCE</u>
Test Group	131.15	141.83	+ 10.68
Control Group	121.29	130.31	+ 9.02

Of all three projects conducted through this research, this group had the greatest increase in attitudes toward themselves, volunteering and the community. Although both control and test groups' scores increased, the test group scored 1.66 points higher than the control. Of interest are the following questions and results of the test and control groups' responses to them:

#	<u>Question</u>	Difference in Pre and Post scores	
		<u>Test</u>	<u>Control</u>
2	Volunteering in the community is...	+ 2.34	- .33
3	Helping others make me feel...	+ .36	+ .23
4	I am...	+ 1.06	+ .90

Although students did not show a positive change toward children and tutoring, the project may have positively influenced their attitudes toward volunteering and helping others, as well as their self-esteem.

II. Teacher observations and behavior rating scale

The following are the average behavior rating scale scores for the test group both before and after the project.

Pre-project average: 73.38

Post-project average: 53.67

The data shows a significant drop -- in fact there were no positive changes in any of the students' scores over the course of the semester. The following are select comments from the teacher:

"Started off as a disruptive student but has become much better. Did work with his student."

"Fair student, prefers to socialize. Has been working really hard lately...does great work with Collins Lane student."

"Does not put forth much effort in class, but did try to work with student."

"Was caught throwing M&M's and chalk at cars on return trip from Collins Lane. Was suspended 2 days and not allowed to go on our final trip."

[Four students were involved in this incident with the same repercussions]

"Good kid, worked well with student....work is still dropping, does great with tutoring."

"Skipped trip to Collins Lane...suspended from school..doesn't want to work with kid at Collins Lane."

III. Records of grades and attendance

- A. Grades -- The following is a table indicating the average grades (percentages based on a 100% scale) both before and after the project for each group.

	<u>PRE-GRADES</u>	<u>POST- GRADES</u>
Test Group	72.21%	68.59%
Control Group	67.46%	59.04%

The data indicates that involvement in the tutoring project did not have a positive impact on the students' grades. The data does show that the test group's grades did fall less significantly than the control group's; however, it cannot be concluded that this was caused by their involvement in this project.

- B. Attendance

The following is a table indicating attendance for each group both before and after participating in their project. These data were calculated by determining the percentage of days each student was in class before and during the project and averaging these figures.

	<u>Pre Project</u>	<u>During Project</u>	<u>Difference</u>
Test Group	94.79%	89.07%	- 5.72%
Control Group	92.04%	86.00%	- 6.04%

As with the data on pre and post grades, it can be determined that involvement in the project had no impact on the students' attendance in the class. However, the teacher made the following comment on his evaluation form: "Attendance was better on Wednesdays, the day we went to Collins Lane, than on any other day of the week."

IV. Student Comments

The teacher provided an opportunity to have the students reflect on their involvement with the Collins Lane students. The following are select quotes:

"I helped a lot of the kids by being an excellent role model. I learned that the kids are our future and that we should help them in any way we can."

"I think that I have helped because I kept going over the things that wasn't clear to them until they got it...teaching isn't as easy as it looked."

"I learned how to teach kids and how they achieved week by week."

"I learned a lot about myself and I was able to teach everything from addition to division to younger children."

"I learned that if you help somebody learn what you've already learned then you can find out what you already know."

Interestingly, after talking with the teacher at the beginning of the 1996/97 school year, he mentioned that students in his algebra class, who had been involved in this pre-algebra class, have asked if they will be tutoring at Collins Lane again, indicating they did enjoy the project.

SUMMARY

This research project provided many challenges and opportunities. The most positive outcome may have been the simple exposure of this teaching methodology to the three teachers involved. This is especially relevant because the teachers who participated taught in subject areas that are often overlooked when incorporating service-learning into the curriculum. If they choose to incorporate a service-learning aspect into their classroom again, they now have the tools needed to make it successful. Another positive outcome was the exposure the students had to this type of teaching. Although statistically insignificant, the data showed trends that students' attitudes can change as a result of being involved in these types of projects on a consistent basis with the same group of service recipients. Projects incorporated into the curriculum that are varied and not done on a regular basis, as with Project 2, can impact the students; however if the objective of doing service-learning is to positively change attitudes, projects such as those done on a long-term basis may produce more significant results. Also, projects that provide direct human interaction seem to be better received by the students than projects that are strictly indirect in nature. As was shown by the data, the students exposed to the senior citizens did improve their attitudes toward this age group, even though only slightly, whereas, students in Project 2 showed no positive attitude changes as a result of their indirect service experience. The only exception for Project 2 was with the direct service they conducted at the elementary school which did show a very slight positive change.

As far as grades and attendance, none of the three projects impacted those students in the test groups. It was hoped that involvement in service-learning projects would motivate the students to want to learn because they provided real-world application to their classwork; however, that was not the case. Students continued to miss class, and grades, in general, did not improve. Because there are so many other variables (i.e. other classes, home life, peer pressure, etc.) that affect students' lives today, it would be difficult to influence the whole attitude of the student by a service project they did in *one* class. If such a study was to be conducted again, new methods need to be developed to help researchers determine whether positive changes *are* a result of involvement in service-learning, rather than other influences. It is suggested that future research look for test groups where students are involved in these projects in all classes to compare with control groups that are not involved in any projects. Such a study would provide a much better look at attitude changes of the students, especially toward school and classwork. In addition, it is recommended that future projects eliminate the use of the attitude testing based on the belief that many students do not take these tests seriously; thus affecting the results of the data. Research should take a more personal approach by talking with a random selection of students both before and after the test to get their opinions.

Overall, this research project provided a very valuable learning experience in how to best pre-plan for service-learning projects. For example, if considerably more time had been spent looking for senior citizens to tutor the students, more may have participated; subsequently making Project 1 more successful. In setting up a tutoring project between high school students and elementary children, as with Project 3, considerable pre-planning must be done to make it successful. Project 3 may have been more successful if it had been initiated by the elementary teachers because *they* saw a need for math tutoring. Even though the Collins Lane teachers did see a need for their students to be tutored, they did not really buy into the project. Project 3 was initiated in order to find a way for the teacher to incorporate service-learning into his classroom for this research. If this project had been initiated by the elementary teachers, and they had come to the students to request their help, perhaps the students would have been more interested in the project and would have taken more of an ownership role. This research has strengthened the premise that projects should definitely be started with a need for service, rather than a need for a project.

This research has also opened up the question of whether all students in a class should be required to do service-learning, especially when it comes to direct interaction with service recipients. All of the high school students in all three projects were told they would participate and were not given a choice. Involving every student often creates opportunities for disinterested students to cause problems. A few negative incidents can significantly reduce the success of a project and can cause some agencies to look the other way when asked to become involved in another service-learning initiative. A quote from one of the elementary teachers who worked with Project 3 stated "I felt the program was not well planned and disorganized for the most part. I haven't seen any real improvement in skills in the students who participated.....I think the program is really a good idea, but I think the student tutors or tutees need to be chosen selectively and specific guidelines followed..." Perhaps future research should focus on determining whether it is beneficial for *all* students in a class to participate in these direct interaction types of projects, or it should focus on ways to get all students interested in the project by placing them in an ownership role. It can be hypothesized that all three of these projects may have had more significant attitude changes had students taken the lead in organizing their particular project.

Overall, this research project provided an excellent learning opportunity for the Project Coordinator who learned many valuable lessons along the way. Perhaps, in the future, Franklin County will continue this research, using this first project as a baseline. There are many ways that this type of research can help teachers and administrators see the impact service can have on students. By doing this project, Franklin County has only begun to scratch the surface of possibilities.

BUDGET

Please see attached budget.

CKEC GRANT BUDGET
As of October 15, 1996

ITEM	BUDGET	ITEMIZED EXPENSES	AMOUNT SPENT	REMAINING	BALANCE
Travel	495	Townsend -- 4/19	16.32	478.68	
0012118-0511-4126		Townsend -- 5/3	21.12	457.56	
		Townsend -- 5/21	16.32	441.24	
		Fry -- 3/13	15.26	425.98	
		Fry -- 3/27	15.99	409.99	
		Fry -- 5/1	15.26	394.73	
		Fry -- 5/15	12.39	382.34	
		Fry -- 5/22	14.06	368.28	
		Fry -- 5/29	14.06	354.22	354.22
Supplies	145	Kroger (vol. recognition) CO-602	41.38	103.62	
0012118-0610-4126		Educator's Delight (tutoring supplies) CO-555	13.85	89.77	
		Educator's Delight (tutoring supplies) CO-468	72.5	17.27	
		Walmart (soil testing supplies) CO-490	14.16	3.11	3.11
Extended time	1360	Chase (8.75 hrs. @ \$20/hr.)	175	1185	
0012118-0180-4126		Townsend (11 hrs. @ \$20/hr.)	220	965	
		Fry (11.5 hrs. @ \$20/hr.)	230	735	
		Cofer (32 hrs. @ \$20/hr.)	640	95	95
TOTAL EXPENSES			1547.67		
TOTAL BALANCE					357.33

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20

21

APPENDIX A

Contents:

P. 1	Lickert test used for Project 1
P. 2	Lickert test used for Project 2
P. 3	Lickert test used for Project 3
P. 4-7	Semantic Differential test used for all 3 projects

DIRECTIONS

Read the statements below. Decide whether you:

Strongly agree (SA)
 Agree (A)
 Undecided (U)
 Disagree (D)
 Strongly Disagree (SD)

Then put a check in the corresponding blank.

No	QUESTION	SA	A	U	D	SD
1	Working with numbers is fun					
2	Algebra should be avoided whenever possible					
3	Algebra is fun because it makes you think					
4	Doing algebra is boring					
5	One cannot use algebra in daily life					
6	Algebra is too complicated					
7	Algebra is necessary in daily life					
8	There are too many chances to make a mistake in algebra					
9	Algebra is practical					
10	Algebra is a waste of time					
11	Algebra is very interesting					
12	My teacher is not interested in helping me succeed in algebra					
13	I like coming to my algebra class					
14	My algebra teacher provides better ways to learn algebra					
15	Senior citizens have no value					
16	Senior citizens are friendly people					
17	Senior citizens scare me					
18	I look forward to growing old					
19	I like being around senior citizens					
20	Working with senior citizens is fun					
21	I have no desire to help senior citizens					
22	Senior citizens like being around teenagers					

DIRECTIONS

Read the statements below. Decide whether you:

Strongly agree (SA)
 Agree (A)
 Undecided (U)
 Disagree (D)
 Strongly Disagree (SD)

Then put a check in the corresponding blank.

Nc	QUESTION	SA	A	U	D	SD
1	Working with science is fun					
2	Science should be avoided whenever possible					
3	Science is fun because it makes you think					
4	Doing science is boring					
5	One cannot use science in daily life					
6	Science is too complicated					
7	Science is necessary in daily life					
8	There are too many chances to make a mistake in science					
9	Science is practical					
10	Science is a waste of time					
11	Science is very interesting					
12	My teacher is not interested in helping me succeed in science					
13	I like coming to my science class					
14	My science teacher provides better ways to learn science					
15	I like teaching children					
16	Working in the community is fun					
17	I do not make contributions to my community					
18	The community does not see me as valuable					
19	I believe helping the environment is worthwhile					
20	I think one person can make a difference in my community					
21	Sharing what I have learned with others is unimportant					
22	I am not interested in helping others					

DIRECTIONS

Read the statements below. Decide whether you:

Strongly agree (SA)
 Agree (A)
 Undecided (U)
 Disagree (D)
 Strongly Disagree (SD)

Then put a check in the corresponding blank.

No	QUESTION	SA	A	U	D	SD
1	Working with numbers is fun					
2	Math should be avoided whenever possible					
3	Math is fun because it makes you think					
4	Doing math is boring					
5	One cannot use math in daily life					
6	Math is too complicated					
7	Math is necessary in daily life					
8	There are too many chances to make a mistake in math					
9	Math is practical					
10	Math is a waste of time					
11	Math is very interesting					
12	My teacher is not interested in helping me succeed in math					
13	I like coming to my math class					
14	My math teacher provides better ways to learn math					
15	Helping children with school work is fun					
16	Tutoring is beneficial					
17	I dislike being around children					
18	It is important to take an interest in children					
19	I think helping children with homework is unnecessary					
20	Children look up to me					
21	Children scare me					
22	Children are not valuable					

WE WANT TO KNOW WHAT YOU THINK!

Instructions:

- The purpose of this test is to provide an indication of how you view certain concepts, which are expressed in phrases. In responding, please make judgments based on what these concepts *mean to you*.
- There are no right or wrong answers. You will not be graded.
- This test is anonymous and will not go on your permanent record.
- On this test you will find different concepts (in capital letters) to be judged. You are to rate each concept on each of these scales.

For example, if in your view the CONCEPT represented by SPORTS ARE is *very closely related* to one end of the scale, you should place your mark as shown in the example which follows:

SPORTS ARE
exciting X:__:__:__:__ boring

or

exciting __:__:__:__:X boring

If in your view the CONCEPT is *less closely related* to one or the other end of the scale, you should place your mark as shown in the example which follows.

SPORTS ARE
easy __:__:X:__:__:__ hard

or

easy __:__:__:__:X:__ hard

If you consider the CONCEPT to be *neutral* on the scale, or if the scale does not make sense to you, then you should place your mark in the middle space as shown.

PEOPLE ARE

honest __:__:__:X:__:__:__ dishonest

IMPORTANT: (1) Place your make in the *middle of the spaces*, not on the boundaries

THIS NOT THIS
X:__:__:__:X

- (2) Be sure to check every scale for every concept. Do not skip any.
- (3) *Do not* put more than *one* mark on a single scale.

I THINK TEENAGERS ARE

good ____:____:____:____:____ bad
cruel ____:____:____:____:____ kind
honest ____:____:____:____:____ dishonest
valuable ____:____:____:____:____ worthless
sad ____:____:____:____:____ happy

VOLUNTEERING IN THE COMMUNITY OR SCHOOL IS

good ____:____:____:____:____ bad
worthless ____:____:____:____:____ valuable
pleasant ____:____:____:____:____ unpleasant
tense ____:____:____:____:____ relaxed
necessary ____:____:____:____:____ unnecessary

HELPING OTHERS MAKES ME FEEL

bad ____:____:____:____:____ good
low ____:____:____:____:____ high
calm ____:____:____:____:____ agitated
valuable ____:____:____:____:____ worthless
awful ____:____:____:____:____ nice

I AM

kind _____ cruel
honest _____ dishonest
important _____ not important
valuable _____ worthless
sad _____ happy

MY COMMUNITY SEES TEENAGERS AS

good _____ bad
unpleasant _____ pleasant
worthless _____ valuable
honest _____ dishonest
nice _____ awful

MY COMMUNITY IS

fair _____ unfair
friendly _____ unfriendly
kind _____ cruel
unclean _____ clean
valuable _____ worthless

I THINK MY SCHOOL IS

friendly ____:____:____:____:____ unfriendly
interesting ____:____:____:____:____ boring
valuable ____:____:____:____:____ worthless
relaxed ____:____:____:____:____ tense
caring ____:____:____:____:____ uncaring

MY CLASSMATES ARE

unfriendly ____:____:____:____:____ friendly
kind ____:____:____:____:____ cruel
unpleasant ____:____:____:____:____ pleasant
helpful ____:____:____:____:____ unhelpful
valuable ____:____:____:____:____ worthless

**FEEL FREE TO USE THE SPACE BELOW
TO MAKE ANY ADDITIONAL COMMENTS**

APPENDIX B

Contents:

- P. 1 Behavior rating scale
- P. 2 Student Information Sheet

CKEC RESEARCH GRANT

Student Information Sheet

Please complete this form for each student in the test group

NAME: _____

SS#: _____

AGE: _____

GENDER: ☐ Male ☐ Female

CLASS STATUS: ☐ Freshman ☐ Sophomore
 ☐ Junior ☐ Senior

ETHNICITY: ☐ Caucasian ☐ African-American
 ☐ Asian ☐ Hispanic
 ☐ American Indian ☐ Other

MID-TERM GRADE (PRE-PROJECT) _____

FINAL GRADE (POST-PROJECT) _____

OTHER COMMENTS:

All information in this packet will be kept strictly confidential

P.2

APPENDIX C

Contents:

- | | |
|------|---|
| P. 1 | Tutoring contract (used for Project 3) |
| P. 2 | Tutoring information sheet (used for Project 3) |

TUTORING CONTRACT

This contract is to clarify math tutoring services that Western Hills High School students will provide to Collins Lane students for the remainder of the school year.

RESPONSIBILITIES:

WESTERN HILLS HIGH SCHOOL STUDENTS WILL:

- 1) Come prepared to provide consistent and meaningful math tutoring to the student(s) to which they have been assigned
- 2) Be a positive role model for the elementary students (this means acting and talking in ways that will not hinder the success of the program or negatively influence the elementary students)
- 3) Work on the skills Collins Lane teachers have outlined for their students (see below)
- 4) Complete the tutoring information sheet after each session honestly and openly.

COLLINS LANE STUDENTS WILL:

- 1) Listen to their math tutor
- 2) Work on the skills outlined by their teacher (see below)
- 3) Let their teacher know how their math tutoring sessions are going by returning the Tutoring Information Sheet to them after each session.
- 4) Be ready to learn!

THIS CONTRACT IS BETWEEN:

Western Hills student

Collins Lane student

MATH SKILLS TO BE WORKED ON DURING EACH SESSION:

Signature, Western Hills student

Signature, Collins Lane student

TUTORING INFORMATION SHEET

(TO BE COMPLETED AFTER EACH TUTORING SESSION)

DATE:

WHHS STUDENT NAME:

COLLINS LANE STUDENT NAME:

WHAT DID YOU WORK ON TODAY?

HOW WAS THE COLLINS LANE STUDENT'S BEHAVIOR?

PLEASE WRITE ANY OTHER COMMENTS BELOW OR ON THE BACK OF THIS FORM:

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